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EXAMINER

HUNG, YUBIN

ART UNIT	PAPER NUMBER
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2624

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ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

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Office Action Summary	Application No. 10/064,620	Applicant(s) MUKHOPADHYAY ET AL.	
	Examiner YUBIN HUNG	Art Unit 2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 May 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8, 12-26, 31-33 and 35-38 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8, 12-26, 31-33 and 35-38 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 December 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Response to Amendment/Arguments

1. This Office action is in response to the amendment filed on 5/15/09.
Currently claims 1-8, 12-26, 31-33 and 35-38 are still pending.
2. Applicant's amendment has overcome the 35 USC 101 rejections of claims 1-8 and 31; however, the rejections of claims 12-23, 32, 33 and 35-38 are maintained, see below.
3. Applicant's amendment has not overcome the 35 USC 112, first paragraph rejection of claim 23; see below.
4. In view of applicant's amendment the 35 USC 112, second paragraph rejection of claims 12 and 13 have been withdrawn.
5. Regarding the 35 USC 103 rejections Applicant's arguments filed 5/19/09, except for those regarding claim 14 (P. 12, 3rd paragraph), are directed to the new limitations (that "the at least one frame including at least a single image..." and that "the plurality of frames including a plurality of single images...") in the independent claims and are addressed in the new rejections below, in view of De Bonet (US 6,535,642) and Peschmann et al. (US 4,610,021).

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6. Regarding claim 14 Applicant argues that there is no motivation to combine, or if there is, then there is no teaching as to how the devices can be integrated (P. 12, 3rd paragraph).

7. In response to the above argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, the examiner indicated reasons for combining Peschmann with Tuy and De Bonet (see the last paragraph of Item 27 of the 12/09/09-mailed Office action). Additionally, it is well known in the art that a CT device (such as the one disclosed in Tuy) comprises one or more collimator rings (e.g., see, for example, Figs. 1, 3, 5-8 and Col. 4, line 56-Col. 5, line 10 in particular, of US 4,610,021 issued to Peschmann et al.). Therefore while Tuy does not expressly disclose that the CT device comprise a collimator ring, it is fair to assume that one is used; even if this is not the case, it would have been obvious to use one in a known manner, for the reasons as Peschmann indicated in Col. 15, line 51-Col. 16, line 6 and Col. 16, lines 42-52. Therefore the argument is not persuasive.

Claim Rejections - 35 USC § 101

8. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

9. Claims 12- 23, 32, 33 and 35-38 are rejected under 35 U.S.C. 101 as not falling within one of the four statutory categories of invention. Supreme Court precedent¹ and recent Federal Circuit decisions² indicate that a statutory “process” under 35 U.S.C. 101 must (1) be tied to another statutory category (such as a particular apparatus), or (2) transform underlying subject matter (such as an article or material) to a different state or thing. While the instant claim(s) recite a series of steps or acts to be performed, the claim(s) neither transform underlying subject matter nor positively tie to another statutory category that accomplishes the claimed method steps, and therefore do not qualify as a statutory process. (Note that while imaging devices such as MRI are mentioned or inherited in claims 12-22, they describe how the images are acquired but are not used in performing the functional steps of the claims. Regarding claim 32, the X ray angiogram device is mentioned in the preamble and therefore is not given weight; i.e., the recited method is not considered to be tied to the device.)

¹ *Diamond v. Diehr*, 450 U.S. 175, 184 (1981); *Parker v. Flook*, 437 U.S. 584, 588 n.9 (1978); *Gottschalk v. Benson*, 409 U.S. 63, 70 (1972); *Cochrane v. Deener*, 94 U.S. 780, 787-88 (1876).

² *In re Bilski*, 88 USPQ2d 1385 (Fed. Cir. 2008).

Claim Rejections - 35 USC § 112

10. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

11. Claim 23 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Specifically, claim 23 recites applying lossless compression and lossy compression to frames of the same plurality of frames and support cannot be found. [Note: in a phone interview on 12/4/08 Applicant's representative Mr. Joseph Stecewycz indicated that support could be found in Fig. 1, ref. 130 and paragraph 31 of the instant application. However, paragraph 16 of the application states that in 130 lossless compression is applied to the selected portion and paragraph 31 states that lossy compression is applied to the selected portion (for applications for which precision is not critical). Nowhere can support be found that lossless compression and lossy compression are applied to different portions, let alone different frames, of the same plurality of frames. Therefore the written description requirement has not been complied.]

Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

13. Claims 1-3, 5, 12, 13, 24-26 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tuy et al. (US 5,297,043) and in view of De Bonet (US 6,535,642).

14. Regarding claim 1, and similarly claims 12, 24 and 31, Tuy discloses

- providing a span of interest for an acquired image sequence, wherein the span of interest defines a time sequence and a space sequence in the acquired image sequence that includes analytically relevant information in the acquired image sequence
[Fig. 1, refs. B (acquired image sequence), 20 & 32 (provides a span of interest as recited); Figs. 2 (acquired image sequence), 3A, 3B & 4; Col. 4, lines 66-68; Col. 5, lines 22-24; Col. 6, lines 23-25]
- selecting at least one frame of the acquired image sequence in the span of interest
[See the analysis above. Note that the per paragraph 17, especially lines 9-11, of the instant application a frame is a snapshot of a part of an image]
- displaying at least one analytically relevant image, thereby displaying the analytically relevant information
[Fig. 1, ref. C; Col. 5, lines 22-24]

While in Fig. 3A Tuy discloses a cube to select region of interest [Col. 5, lines 22-29] and the cube as disclosed does not preclude the selection of an entire image (as required by the new limitation), it does expressly disclose as such, either.

However, De Bonet suggests selecting the entire image [Col. 1, lines 22-26 and Col. 6, lines 59-66] and lossless compress/decompress it [Fig. 2, refs. 202 (compress) and 210 (decompress)]. Therefore it would have been obvious to one of ordinary skill in the art to modify Tuy with the teachings of De Bonet. The reasons for doing so at least would have been to reduce the size of the image data while preserving all sensitive details (by lossless compression) in the entire image, as De Bonet indicates in Col. 1, lines 23-34.

15. Regarding claims 2, 3, and similarly claims 25 and 26, Tuy further discloses

- (claims 2 & 26) wherein the at least one frame comprises a plurality of frames in time sequence
[Fig. 3C]
- (claims 3 & 25) wherein the at least one frame comprises a plurality of frames in space sequence
[Fig. 3C]

16. Regarding claim 5, the combined invention of Tuy and De Bonet further discloses

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- wherein selecting the at least one frame in the acquired image sequence comprises using a user to select option for selecting the portion of image
[Tuy: Fig. 1, ref. 32]

17. Regarding claim 13, Tuy further discloses

- wherein the imaging device is a medical imaging device selected from the group consisting of: a magnetic resonance imaging system, a computed tomography system, an x ray system, an x ray angiogram system and an ultrasound system
[Fig. 1; ref. A and Col. 4, lines 21-27 (CT scanner or MRI)]

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18. Claims 4 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tuy et al. (US 5,297,043) and De Bonet (US 6,535,642) as applied to claims 1-3, 5, 12, 13, 24-26 and 31, and further in view of Scorse et al. (US 5,128,776).

19. Regarding claim 4, the combined invention of Tuy and De Bonet discloses all limitations of its parent, claim 1.

Scorse discloses the following limitation that is not expressly disclosed in the combined invention of Tuy and De Bonet:

- archiving the at least one analytically relevant image
[Fig. 1, ref. 34, 38; Col. 4, lines 20-22]

The combined invention of Tuy and De Bonet is combinable with Scorse since they have aspects that are from the same field of endeavor of compression.

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At the time of the invention, it would have been obvious to one of ordinary skill in the art to modify the combined invention of Tuy and De Bonet with the teaching of Scorse by archiving relevant image sequence. The reasons at least would have been to have important data preserved for later use or review.

Therefore, it would have been obvious to combine Scorse with Tuy and De Bonet to obtain the invention as specified in claim 4.

20. Regarding claim 7, the combined invention of Tuy and De Bonet discloses all limitations of its parent, claim 5. In addition, Scorse further discloses

- wherein the user select option comprises manually marking frames of interest
[Fig. 1, ref. 18; Col. 4, lines 35-37]

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21. Claims 6 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tuy et al. (US 5,297,043) and De Bonet (US 6,535,642) as applied to claims 1-3, 5, 12, 13, 24-26 and 31, and further in view of Ransford et al. (EP 479,563 A2).

22. Regarding claim 6, the combined invention of Tuy and De Bonet discloses all limitations of its parent, claim 5.

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The combined invention of Tuy and De Bonet does not expressly disclose the following, which is taught by Ransford:

- wherein the user select option comprises segmenting an identifiable anatomy of a patient
[Col. 11, lines 28-32]

The combined invention of Tuy and De Bonet is combinable with Ransford since they have aspects that are from the same field of endeavor of medical image processing (specifically, X-ray and ultrasound images).

At the time of the invention, it would have been obvious to one of ordinary skill in the art to modify the combined invention of Tuy and De Bonet with the teaching of Ransford as recited above. The reasons at least would have been to locate the part (e.g., thorax) of a patient that is of interest, as Ransford indicates in Col. 11, lines 29-31.

Therefore, it would have been obvious to combine Ransford with Tuy and De Bonet to obtain the invention as specified in claim 6.

23. Regarding claim 8, Ransford further discloses

- wherein the user select option comprises sketch-gripping an image boundary
[Col. 11, lines 28-32]

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24. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tuy et al. (US 5,297,043) and De Bonet (US 6,535,642), and further in view of Peschmann et al. (US 4,610,021).

25. Regarding claim 14, first note that Tuy discloses using X-ray imaging to acquire images [Fig. 1, ref. 14; Col. 4, lines 21-34]. Moreover, per the analysis of claim 1 the combined invention of Tuy and De Bonet discloses

- providing a span of interest for the images obtained by the x ray device, wherein the span of interest defines a time sequence and a space sequence that includes analytically relevant information in the images and excludes other information in the images
- selecting at least one frame of interest in the span of interest, thereby selecting the analytically relevant information and sacrificing the other information, the at least one frame of interest including at least a single image obtained by the X-ray device
- applying lossless compression to the at least one frame of interest and obtaining therefrom a compressed image sequence
- applying decompression to the compressed image sequence and obtaining therefrom an analytically relevant image sequence
- displaying the analytically relevant image sequence, thereby displaying the analytically relevant information without displaying the other information

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The combined invention of Tuy and De Bonet does not expressly disclose the following, which is taught by Peschmann:

- wherein the space sequence is defined by circular zone in a collimator ring [Fig. 5, refs. 72-76 (collimator defining a circular zone); Col. 4, line 21-Col. 5, line 5]

At the time of the invention, it would have been obvious to one of ordinary skill in the art to modify the combined invention of Tuy and De Bonet with the teaching of Peschmann to obtain the invention as specified in claim 14. The reasons for doing so at least would have been as those indicated by Peschmann in Col. 1, lines 45-56.

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26. Claims 15 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tuy et al. (US 5,297,043) and De Bonet (US 6,535,642), and further in view of Sutherland et al. (USPUB 2005/0277823 A1).

27. Regarding claim 15, per the analysis of claim 1 the combined invention of Tuy and De Bonet disclose

- providing a span of interest for the images obtained by (an imaging device), wherein the span of interest defines a plurality of frames in a time sequence between two time instances that includes analytically relevant information in the acquired image sequence
- applying lossless compression to the plurality of frames of interest and obtaining therefrom a compressed image sequence

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- applying decompression to the compressed image sequence and obtaining therefrom an analytically relevant image sequence
- displaying the analytically relevant image sequence

The combined invention of Tuy and De Bonet does not expressly disclose that the frames are obtained from an x-ray angiogram.

However, Sutherland discloses capturing x-ray angiograms (as image frames) and comparing a series of angiograms over a time period (i.e., between two time instances) for diagnostic purpose [Figs. 6A-6C, 7A, 9A, 9B; Abstract; Paragraphs 3, 12, 41-45, 56, 69, 70].

The combined invention of Tuy and De Bonet is combinable with Sutherland since they have aspects that are from the same field of endeavor of image acquisition.

At the time of the invention, it would have been obvious to one of ordinary skill in the art to modify the combined invention of Tuy and De Bonet with the teaching of Sutherland by using x-ray angiograms over a time period (for diagnostic purpose). The reasons at least would have been to be able to track vascular intervention site, as Sutherland indicates in paragraph 12.

Therefore, it would have been obvious to combine Sutherland with Tuy and De Bonet to obtain the invention as specified in claim 15.

28. Regarding claim 16, Sutherland further teaches/suggests a span for analysis as the span when the dye is present, i.e., begins when the dye appears and ends when it disappears [Paragraph 3, last 3 lines].

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29. Claims 17 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tuy et al. (US 5,297,043) and De Bonet (US 6,535,642), and further in view of Chui et al. (US 5,841,473).

30. Per the analysis of claim 15, the combined invention of Tuy and De Bonet discloses all limitations of claim 17 except for the imaging device, which is an MRI for claim 17.

However, Chui discloses compressing MRI image sequences [Col. 6, lines 36-44].

The combined invention of Tuy and De Bonet is combinable with Chui since they have aspects that are from the same field of endeavor of image compression.

At the time of the invention, it would have been obvious to one of ordinary skill in the art to modify the combined invention of Tuy and De Bonet with the teaching of Chui by compressing MRI image sequences. The reasons for doing so at

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least would have been because such images are frequently acquired in medical procedures and the reduction of their size (by compression) can save the storage cost.

Therefore, it would have been obvious to combine Chui with Tuy and De Bonet to obtain the invention as specified in claim 17.

31. Regarding claim 18, note that Tuy discloses a plurality of frames in a space sequence [Fig. 3C]

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32. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tuy et al. (US 5,297,043), De Bonet (US 6,535,642) and Chui et al. (US 5,841,473) as applied to claims 17 and 18 above, and further in view of Reinsch (US 5,134,661).

Regarding claim 19, the combined invention of Tuy, De Bonet and Chui discloses all limitations of its parent, claim 17.

The combined invention of Tuy, De Bonet and Chui does not expressly disclose that the frames are automatically selected using edge detection.

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However, Reinsch suggests using edge detection to select areas of interest.

[Abstract: lines 1-9. Note that per paragraph 17 of the instant application, an image is a 2-D or 3-D distribution of pixels and a frame can be a snapshot of part of an image (such as an area of interest).]

The combined invention of Tuy, De Bonet and Chui is combinable with Reinsch since they have aspects that are from the same field of endeavor of image processing.

At the time of the invention, it would have been obvious to one of ordinary skill in the art to modify the combined invention of Tuy, De Bonet and Chui with the teaching of Reinsch by using edge detection to select areas of interest. The motivation would have been because edge detection produces edge points that can be processed to obtain the contours of regions of interest.

Therefore, it would have been obvious to combine Reinsch with Tuy, De Bonet and Chui to obtain the invention as specified in claim 19.

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33. Claims 20-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tuy et al. (US 5,297,043) and De Bonet (US 6,535,642), and further in view of and Okazaki (US 5,311,869).

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34. Regarding claim 20, per the analysis of claim 1 the combined invention of Tuy and De Bonet discloses

- providing a span of interest for the images obtained by (an imaging device), wherein the span of interest defines at least one frame in a time sequence and a space sequence
- applying lossless compression to the at least one frame of interest and obtaining therefrom a compressed image sequence
- applying decompression to the compressed image sequence and obtaining therefrom an analytically relevant image sequence
- displaying the analytically relevant image sequence

The combined invention of Tuy and De Bonet does not expressly disclose that the imaging device is an ultrasound device.

However, Okazaki discloses using an ultrasound device to acquire image data. [Abstract; Fig. 4, especially ref. 16 (ultrasonic wave transducer); Col. 6, lines 8-34.]

At the time of the invention, it would have been obvious to one of ordinary skill in the art to modify the combined invention of Tuy and De Bonet with the teaching of Okazaki to obtain the invention as specified in claim 20. The reasons for doing so at least would have been to be able to acquire images for display as part of a medical treatment process (as Okazaki indicates in the abstract as well as Col. 8, lines 8-64). Note that it is well known that ultrasound device does not expose patients or medical personnel to radiation. [For example, see Col. 2, lines 18-26

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of Zanelli (US 6,515,657)—not relied upon in this rejection but was cited in the 06/16/08-mailed Office action.]

Regarding claims 21 and 22, the combined invention of Tuy, De Bonet and Okazaki discloses all limitations of its parent claim 20. Additionally, Nishihara also discloses automatic selection (teaching for claim 21) of region of interest [Fig. 9, ref. 68 and Col. 8, lines 36-59] and Tuy discloses manual selection (teaching for claim 22) of ROI [Fig. 1 (especially refs. 20, 32 and C); Col. 5, lines 22-46]. Further, Okazaki also discloses the acquired images are fan-shaped. [See ref. 42 in Figs. 1, 4, 8(A) and 8(B); Col. 1, lines 31-34 & 49-51; Col. 8, lines 8-64. Note that the fan-shaped images are considered as ROI.]

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35. Claim 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tuy et al. (US 5,297,043) and De Bonet (US 6,535,642) as applied to claims 1-3, 5, 12, 13, 24-26 and 31, and further in view of Nishihara et al. (US 4,903,317).

36. Regarding claim 23, per the analysis of claim 1 the combined invention of Tuy and De Bonet discloses all limitations except that of applying a lossy compression. However, Nishihara discloses lossily compressing/decompressing a second region that is not the selected (first) portion (i.e., the ROI) [Fig. 9; Col. 8, lines 36-46].

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Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the combined invention of Tuy and De Bonet with the teaching of Nishihara to obtain the invention of claim 23. The reasons for doing so at least would have been to further reduce the size of the image data since lossy compression can achieve a higher compression ratio, as is well known in the art.

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37. Claims 32, 33 and 36-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tuy et al. (US 5,297,043), De Bonet (US 6,535,642) and Peschmann (US 4,610,021) (as applied to claim 14 above), and further in view of Sutherland et al. (USPUB 2005/0277823 A1).

38. Regarding claim 32, similar to the analysis of claim 14 the combined invention of Tuy, De Bonet and Peschmann discloses all of its limitation except for the limitation that the time sequence is based on a dye, which is taught by Sutherland, as per the analysis of claim 15.

39. Regarding claim 33, per the analysis of claim 16 Sutherland further teaches/suggests a span for analysis as the span when the dye is present, i.e., begins when the dye appears and ends when it disappears [Paragraph 3, last 3 lines].

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Note that the reasons to combine the references have already been provided in the analyses of claims 1, 14 and 15 above.

40. Regarding claim 36, per the analysis of claim 33 the acquired image sequence is confined within a predetermined time-space portion.

41. Regarding claims 37 and 38, note that the combined invention discloses selecting a portion (i.e., a certain ratio A of the total) of the image sequence and applying compression to the selected portion (and therefore reducing the size by a certain ration B).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to apply the ratio ranges recited in claims 37 and 38, respectively). Applicant has not disclosed that the recited ranges provide an advantage, are used for a particular purpose or solve a stated problem. One of ordinary skill in the art, furthermore, would have expected Applicant's invention to perform equally well with either ratios A and B taught by the combined invention or the ranges recited in claims 37 and 38, respectively because both perform the same function of reducing the size of a selected portion of an image sequence.

Therefore, it would have been obvious to one of ordinary skill in this art to modify the combined invention with the recited ranges to obtain the inventions as specified in claims 37 and 38, respectively.

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42. Claim 35 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tuy et al. (US 5,297,043), De Bonet (US 6,535,642), Peschmann (US 4,610,021) and Sutherland et al. (USPUB 2005/0277823 A1) as applied to claims 32, 33 and 36-38 above), and further in view of Matsugu et al. (US 6,167,167).

43. Regarding claim 35, the combined invention of Tuy, De Bonet, Peschmann and Sutherland discloses all limitation of its parent claim 32. The combined invention does not disclose the use of a binary mask, which is taught by Matsugu [Figs. 1 & 2; Col. 10, lines 21-67, especially lines 58-62].

Therefore it would have been obvious to modify the combined invention with the teachings of Matsugu to obtain the invention of claim 35. The reasons for doing so would at least because only an image of the subject region alone is extracted and therefore reduce the size of the data, as Matsugu indicates in Col. 10, lines 58-62.

Conclusion and Contact Information

44. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

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- Stainsby et al. (US 6,704,593) – discloses selecting images of anatomy of interest [Fig. 2, ref. 210]

45. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

46. Any inquiry concerning this communication or earlier communications from the examiner should be directed to YUBIN HUNG whose telephone number is (571) 272-7451. The examiner can normally be reached on 7:30 - 4:00. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vikkram Bali can be reached on (571) 272-7415. The fax phone

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number for the organization where this application or proceeding is assigned is 571-273-8300.

47. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Yubin Hung/
Primary Examiner, Art Unit 2624

August 12, 2009